

WHAT IS CLAIMED IS:

- 1 1. A device for dispensing particulate matter into a fluid stream, comprising:
2 a supply of dry particulate matter;
3 a transport member adapted to receive the particulate matter and a fluid stream;
4 a sensor to detect a weight of at least a portion of the particulate matter; and
5 a controller to monitor the weight of particulate matter dispensed into the fluid
6 stream.
- 1 2. The device of claim 1, wherein the controller determines the weight of particulate
2 matter dispensed into the fluid stream.
- 1 3. The device of claim 1, further comprising means to start or stop the dispensation of
2 the particulate matter into the fluid stream.
- 1 4. The device of claim 1, further comprising a valve connected to the transport member
2 for controllably releasing a quantity of the particulate matter from a container into the
3 transport member.
- 1 5. The device of claim 4, wherein the valve includes a rotor assembly comprising an
2 auger.
- 1 6. The device of claim 1, wherein the sensor comprises a transducer selected from the
2 group consisting of a load cell and a scale.
- 1 7. The device of claim 6, wherein the controller is housed in the scale and the container
2 comprises a flexible bin.
- 1 8. The device of claim 1, wherein the sensor detects a weight of a portion of the
2 particulate matter before it is dispensed into the fluid stream.

- 1 9. The device of claim 1, wherein the sensor is operative to measure a weight that
2 includes the weight of the particulate matter and the weight of a bin containing the particulate
3 matter.
- 1 10. The device of claim 1, wherein the sensor is operative to measure a weight that
2 includes the weight of the particulate matter and the weight of the dispensing device.
- 1 11. The device of claim 1, wherein the controller is wirelessly coupled to the sensor.
- 1 12. The device of claim 1, wherein the controller comprises a programmable logic
2 controller that receives a signal associated with the weight of a quantity of a particular matter
3 held in a container and wherein the programmable logic controller calculates the weight of
4 particulate matter dispensed during an interval.
- 1 13. The device of claim 1, wherein the conduit comprises an eductor and the particulate
2 matter is selected from the group consisting of pesticides, herbicides, fertilizers, and
3 adjuvants.
- 1 14. The device of claim 1, wherein the controller generates a signal in response to which
2 the flow of particulate matter into the conduit is initiated, stopped, or throttled.
- 1 15. The device of claim 1, wherein the transport member is a generally cylindrical
2 conduit.
- 1 16. The device of claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 or 15, wherein the
2 device further comprises a vibrator to facilitate the dispensation.
- 1 17. A device for dispensing particulate matter, comprising:
2 a container for holding particulate matter;
3 a conduit for transporting a stream of liquid carrier, the conduit being operative to
4 receive particulate matter from the container;

5 a means for detecting a weight of at least a portion of the particulate matter; and
6 means for determining a weight of material dispensed into the liquid carrier.

1 18. The device of claim 17, wherein the measuring means comprises a means for
2 receiving an input from the detecting means and for generating a signal in response to which
3 a flow of particulate matter into the conduit is modified.

1 19. The device of claim 17, further comprising a means connected to the container for
2 controllably releasing a quantity of the particulate matter from the container into the conduit.

1 20. The device of claim 17, wherein the receiving and generating means determines the
2 weight or mass of particulate matter that is released from the container into the conduit.

1 21. The device of claim 17, wherein the measuring means comprises at least one load cell
2 or an electronic scale.

1 22. The device of claim 21, wherein the receiving and generating means is housed in the
2 electronic scale.

1 23. The device of claim 17, wherein measuring means is operative to measure a
2 gravimetric amount that includes the weight of the particulate matter, the container, and a
3 frame.

1 24. The device of claim 17, wherein the receiving and generating means is wirelessly
2 coupled to the detecting means.

1 25. The device of claim 17, wherein the receiving and generating means generates a
2 signal in response to which the flow of particulate matter into the conduit is initiated,
3 stopped, or throttled.

1 26. A system for controlling a networked array of dispensing devices, comprising:
2 a first dispensing device;

3 a second dispensing device for dispensing particulate matter, the second dispensing
4 device comprising:

5 a container for holding particulate matter;
6 a conduit for transporting a stream of liquid carrier, the conduit being
7 operative to receive particulate matter from the container;
8 a sensor to detect a weight of at least a portion of the particulate matter; and
9 a local controller coupled to the sensor to generate a signal when a
10 predetermined quantity of particulate matter is dispensed in response
11 to which the flow of particulate matter into the conduit is modified;
12 a parent controller coupled to the first and second dispensing devices, wherein the
13 parent controller is operative to transmit a first set of instructions to the second dispensing
14 device and the local controller is operative to generate a second set of instructions.

1 27. The system of claim 26, wherein the local controller is operative to transmit status
2 information to the parent controller.

1 28. The system of claim 26, wherein the second dispensing device further comprises a
2 valve connected to the bin for controllably releasing a quantity of the particulate matter from
3 the container into the conduit.

1 29. The system of claim 28, wherein the sensor of the second inductor is operative to
2 detect the weight or mass of particulate matter held in the container.

1 30. The system of claim 26, wherein the sensor comprises an electronic scale.

1 31. The system of claim 26, wherein the first set of instructions comprises instructions
2 selected from the group consisting of start, stop, and chemical select commands.

1 32. A device for dispensing particulate matter into a fluid stream, comprising:
2 a supply of dry particulate matter selected from the group consisting of pesticides,
3 herbicides, fertilizers, and adjuvants;

4 a transport member adapted to receive the particulate matter and a fluid stream;
5 a sensor to detect a weight of at least a portion of the particulate matter; and
6 a controller to monitor the weight of particulate matter dispensed into the fluid
7 stream.

1 33. The device of claim 32, wherein the controller determines the weight of particulate
2 matter dispensed into the fluid stream.

1 34. The device of claim 32, further comprising means to start or stop the dispensation of
2 the particulate matter into the fluid stream.

1 35. The device of claim 32, further comprising a valve connected to the transport member
2 for controllably releasing a quantity of the particulate matter from a container into the
3 transport member.

1 36. The device of claim 35, wherein the valve includes a rotor assembly comprising an
2 auger.

1 37. The device of claim 32, wherein the sensor comprises a transducer selected from the
2 group consisting of a load cell and a scale.

1 38. The device of claim 37, wherein the controller is housed in the scale and the container
2 comprises a flexible bin.

1 39. The device of claim 32, the sensor detects a weight of a portion of the particulate
2 matter before it is dispensed into the fluid stream.

1 40. The device of claim 32, wherein the sensor is operative to measure a weight that
2 includes the weight of the particulate matter, a bin, a the frame.

1 41. The device of claim 32, wherein the controller is wirelessly coupled to the sensor.

- 1 42. The device of claim 32, wherein the controller comprises a programmable logic
2 controller that receives a signal associated with the weight of a quantity of a particular matter
3 held in a container and wherein the programmable logic controller calculates the weight of
4 particulate matter dispensed during an interval.
- 1 43. The device of claim 32, wherein the conduit comprises an educator.
- 1 44. The device of claim 32, wherein the controller generates a signal in response to which
2 the flow of particulate matter into the conduit is initiated, stopped, or throttled.
- 1 45. The device of claim 32, wherein the transport member is a generally cylindrical
2 conduit.
- 1 46. The device of claim 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44 or 45, wherein
2 the device further comprises a vibrator to facilitate the dispensation.
- 3 47. A device for dispensing dry material into a fluid stream, comprising:
4 a conduit for transporting a stream of fluid carrier, the conduit being adapted to
5 receive a supply of dry material;
6 a sensor to measure a weight or mass that includes the weight or mass of at least a
7 portion of the dry material; and
8 a controller coupled to the sensor to generate a signal in response to which a flow of
9 dry material into the conduit is modified.
- 1 48. The device of claim 47, wherein sensor is operative to measure a weight that includes
2 the weight of the dry material and the weight of a bin that contains the particulate matter.
- 1 49. The device of claim 47, wherein the dry material is a particulate matter comprising a
2 fertilizer, pesticide, herbicide, or adjuvant.

- 1 50. The device of claim 49, wherein the controller comprises a programmable logic
2 controller that receives a signal associated with the weight of a quantity of a particular matter
3 held in a container and wherein the programmable logic controller calculates the weight of
4 particulate matter dispensed during an interval.
- 1 51. A method for dispensing particulate matter into a fluid stream, comprising:
2 providing a fluid stream;
3 providing a supply of particulate matter to be dispensed into the fluid stream;
4 sensing a weight of at least a portion of the particulate matter;
5 monitoring the weight of the particular matter dispensed into the fluid stream; and
6 modifying the rate at which the particulate matter is dispensed based on the
7 monitored weight.
- 1 52. The method of claim 51, wherein modifying comprises starting, stopping, or
2 throttling.
- 1 53. The method of claim 51, wherein the monitoring comprises detecting a weight with a
2 transducer.
- 1 54. The method of claim 51, further comprising determining when the weight of
2 particulate matter dispensed meets a predetermined threshold.
- 1 55. The method of claim 51, wherein the supply of particulate matter is provided in a
2 closed flexible container.
- 1 56. The method of claim 55, further comprising determining the change in weight of
2 particulate matter in said container.
- 1 57. The method of claim 52, wherein said particulate matter is selected from the group
2 consisting of pesticides, herbicides, fertilizers, and adjuvants.

1 58. The method of claim 55, further comprising determining the change in weight of
2 particulate matter in said container.

1 59. A method for dispensing particulate matter into a fluid stream using a device for
2 dispensing particulate matter, comprising:
3 providing a fluid stream;
4 measuring a first weight associated with the dispensing device;
5 providing a quantity of particulate matter to be dispensed into the fluid stream;
6 measuring a second weight associated with the dispensing device after the initiation
7 of the dispensing of said particulate matter;
8 ceasing the dispensing of said particulate matter based on the first and second
9 measured weights.

1 60. The method of claim 59, wherein the first measured weight includes the weight of an
2 amount of the particulate matter and a bin coupled to the dispensing device.

1 61. The method of claim 59, wherein the second measured weight differs from said first
2 measured weight by substantially the weight of particulate matter dispensed into said fluid
3 stream during an interval.